Beaver Population Analyses
2011

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Abstract

A helicopter survey in 2011 produced population estimates of approximately 31,100 and 23,600 beavers in Management Zones A and B, respectively. The estimated beaver population in the northern third of Wisconsin increased 21% between 2008 and 2011 but was still 42% lower than in 1995.

Background

In 1989 the Wisconsin State Legislature provided funds for the WDNR to determine the feasibility of significantly reducing beaver numbers in problem areas. A portion of that money was used to develop a survey method for evaluating the effectiveness of various beaver control efforts. Initial development and testing during 1990-92 resulted in a helicopter survey capable of estimating regional beaver populations within ±20% (Kohn and Ashbrenner 1994). This survey was repeated in 1995, 1998, 2001, 2005, 2008, and 2011.

Methods

Active beaver colonies within 42 randomly selected blocks in Beaver Management Zone A and 43 blocks in Zone B were counted from a Schweizer 333 (Fig. 1). The blocks ranged in size from 3.3 to 8.5 mi^2, and averaged 5.5 mi^2. The size and shape of each block was dependent upon locations of suitable boundaries (usually roads) which could be easily identified from the air. The total area surveyed was 228.7 mi^2 in Beaver Management Zone A and 238.6 mi^2 in Zone B.

Two observers plus the pilot were used to identify active colonies. Active colonies were identified by the presence of fresh feed piles, cuttings, and/or evidence that the lodge had been recently maintained. Each block was completely surveyed even though large portions of some blocks did not contain beaver habitat.

The estimated number of active colonies within each block was calculated by dividing the number observed by an observation rate of 0.81 (Payne 1981, Kohn and Ashbrenner 1994). Numbers of colonies within each Beaver Management Zone were then estimated by multiplying the estimated number of colonies per mi^2 in the survey blocks by the total area of the Zone. A mean colony size of 5.5 beaver per colony (Peterson 1979, Kohn and Ashbrenner 1994) was then used to estimate the beaver population within each Zone.

Results

The 2011 Beaver Helicopter Survey was conducted during October 20-29. The survey required 79 hours of flight time, and the total aircraft cost (flight time, per diem for pilot and crew member, and fuel truck) was $48,000.

The survey produced unadjusted estimates (± SE) of 4,578 (± 748) active beaver colonies in Beaver Management Zone A and 3,481 (± 528) colonies in Zone B. Adjusting these figures for an observation rate of 0.81 and an average colony size of 5.5 beaver per colony produced population estimates of approximately 31,100 (± 5,100) beavers in Zone A and 23,600 (± 3,600) in Zone B for a total of 54,700 (± 6,200) beavers in the northern third of the state. Beaver

colony density in northern Wisconsin was estimated to be 0.5 colonies/mi^2 (0.19/km^2) in 2011.

Surveys conducted periodically since the early 1990s show that the estimated number of beaver colonies in the northern third of the state decreased more than 50% between 1995 and 2008, but the latest survey suggests that the population may have stabilized (Figure 2). The 2008 population estimates for zones A and B were 46% and 59% lower than the 1995 estimates. Population estimates in 2011 were 12% and 35% higher than in 2008 in zones A and B, respectively. However, the increase in the beaver population estimate for northern Wisconsin between 2008 and 2011 was not significant ($Z = -1.13$, $P = 0.26$).

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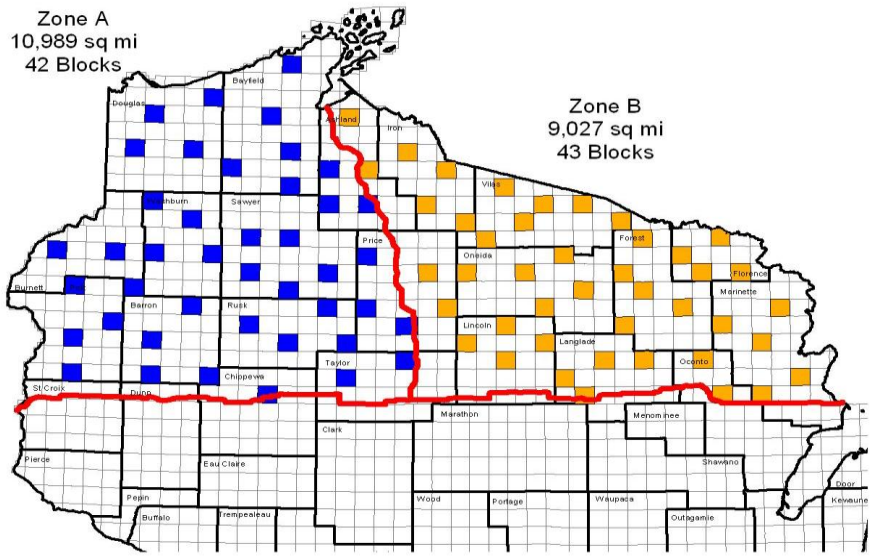

Figure 1. *Wisconsin's Beaver Management Zones A and B and general locations of blocks surveyed.*

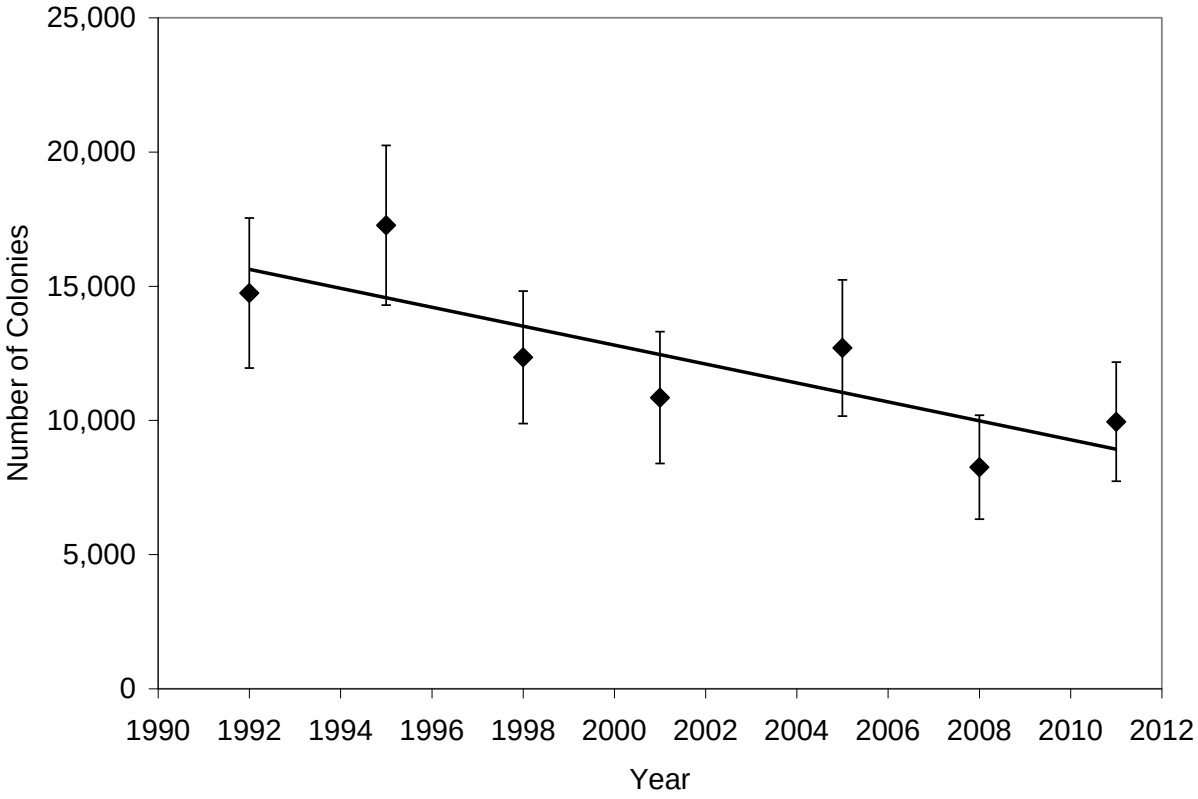

Figure 2. *Estimated number of beaver colonies (± 95%CI) in northern Wisconsin, 1992-2011*.